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MARKET PATHOLOGY

NEW YORK MARKET PATHOLOGY NOTES

James S. Wiant

STRAWBERRY: Florida strawberries have been arriving in excellent condition. Very few of the berries were soft or decayed.

CITRUS FRUITS: A boat load of Florida oranges and grapefruit contained 15 per cent stem-end decay caused by Diplodia natalensis and Phomopsis citri, the former predominating.

CELERY: Forty-five per cent of the celery in one car from New York State was infected with Phoma root rot (Phoma apiicola). Infected bunches were seriously stunted.

ESCAROLE: Several cars of escarole from Florida contained considerable decay caused by Sclerotinia sclerotiorum (S. libertiana). The first symptom was a drying-out of the tips of the outer leaves. This was followed by a rapid decay at the base of the leaves.

ASPARAGUS received from Chile was covered with Penicillium sp. The bunches had been wrapped in wax paper and the cut stalks placed against wet moss.

FROST INJURY: Severe field frost has been noted recently. One car of California celery contained 20 per cent injury. A car of Arizona lettuce showed 80 per cent of the heads so affected. In about 20 per cent of the heads the frost had affected 2-4 of the outer leaves.

D I S E A S E S C A U S E D B Y N E M A T O D E S

ROOT-KNOT ON LONG ISLAND POTATOES

Dr. H. S. Cunningham of the Long Island sub-station has sent the following note:

> "Early in October potato tubers in eastern Long Island were found to be severely injured by the root-knot nema, Caconema radicicola (identified by Dr. N. A. Cobb). Badly infested tubers were easily recognized by their rough, warty appearance. Subsequent investigations have shown this nema to be present in an area extending approximately from Wading River to Cutchogue and also in the Southampton and Bridgehampton areas. The extent of the damage done this season by this pest is not known at present."

NOTES ON NEMIC DISEASES

G. Steiner

Tylenchus dipsaci, the bulb or stem nema, apparently attacks prairie grass (Bromus unioloides) in New South Wales (Australia). According to Dr. I. T. Edwards of the New South Wales Department of Agriculture, alfalfa (lucerne) there is widely infested with this nemic pest. The specimens of prairie grass sent to this office were collected by Dr. Edwards in an alfalfa field heavily infested with Tylenchus dipsaci. The grass, according to his letter, is stunted and shows a good deal of leaf yellowing. The leaf sheaths at the base of the culms are discolored. Examinations revealed, besides Tylenchus dipsaci, numerous specimens of Cephalobus elongatus, a few Cephalobus oxyuroides, Pathoaphelenchus parietinus and a Dorylaimus sp.

Tylenchus dipsaci was also observed twice in garlic from Italy, intercepted in New York in October 1931 and in Philadelphia in January 1932.

Pathoaphelenchus ritzema-bosi, the chrysanthemum nema, was observed in diseased chrysanthemum leaves submitted by C. E. F. Gutermann of Cornell University. The material came from a greenhouse near Ithaca, New York.

Caconema radicicola, the root-knot nema, attacks the crown vetch (Coronilla varia). Infested plants from Arlington Farm were submitted for examination by L. J. Leonard of the U. S. Department of Agriculture.

A new wood inhabiting Pathoaphelenchus seems to be widespread in logs of blue-stained long leaf pine. It is apparently associated with a fungus, in cultures of which it had repeatedly been observed and collected by R. W. Davidson of the U. S. Department of Agriculture. The various samples of material originated in Louisiana and Texas.

Another new Pathoaphelenchus species was observed in large numbers in a diseased piece of sugar cane originating in Jamaica intercepted in October 1931 in Philadelphia.

FRUIT DISEASES

VARIETAL RESISTANCE TO THE "DOUBLE BLOSSOM" DISEASE OF THE BLACKBERRY IN NORTH CAROLINA

George M. Darrow, Bureau of Plant Industry
U. S. Department of Agriculture

The "double blossom" disease has long been known as a chief trouble in the raising of many kinds of blackberries and dewberries in large areas in southern States. Although a serious trouble as far north as New Jersey, it is much more serious in eastern North Carolina and southward.

A collection of blackberries and dewberries planted in 1929 at the Coastal Plain Station of the North Carolina Department of Agriculture at Willard, N. C., has been growing under conditions which offer some indications of the relative susceptibility of the different sorts in this region. The wild blackberry (Rubus floridus (?)) and the red-caned dewberry (R. trivialis) in the immediate vicinity are commonly infested. The sand blackberry (R. cuneifolia) is less common and is rarely if ever infested, though what appear to be natural hybrids of R. floridus and R. cuneifolia have the disease.

A list of the varieties and the relative amounts of infection on each, May 1, 1931, follows:

Variety	Percentage Infection
Blackberries	
Common British	99 plus
Oregon Evergreen (R. laciniatus)	90 plus
Evergreen x Himalaya	50
Brainerd (Himalaya x erect)	1
Himalaya	0
Burbank Thornless	0
Nanticoke (R. cuneifolia)	0
Dewberries	
Austin Thornless	0
Young	1 bud only
Mammoth selfed #1	0
Mammoth selfed #2	5
Mammoth selfed #3	0

The above percentages may be modified later in the season because dormant healthy buds may develop (as has been observed on the Oregon Evergreen) where nearly all the early buds are diseased. On the other hand, some diseased buds may appear later though this is not likely for on healthy plants secondary buds do not start.

At one extreme of susceptibility are the Oregon Evergreen and Common British and at the other Himalaya, Burbank Thornless, and Nanticoke. The Young and Austin Thornless dewberries had all canes, both old and new, cut off after the harvest season in 1930, a practice supposed to reduce the amount of this disease. Apparently the treatment was effective because greater infestations have been observed on these varieties in Maryland where the new canes were not cut off after the harvest season and in southern Alabama where the season is much longer.

The location of the infections on the canes was suggestive. The few healthy buds on the Oregon Evergreen and Common British were chiefly at the tips where they had been covered with soil in the fall.

PEACH YELLOWS INSPECTION IN PENNSYLVANIA

A summary of the peach yellows inspection and eradication in Pennsylvania during the ten years 1921 to 1931 is given by F. L. Holdridge and M. C. Strauser in the following table from their mimeographed Peach Yellows Report for 1931 issued by the Bureau of Plant Industry of Pennsylvania State Department of Agriculture:

PEACH YELLOWS INSPECTION IN PENNSYLVANIA
DURING THE PERIOD - 1921 TO 1931

Year	Counties Inspected	Number Trees Inspected	Orchards Inspected	Trees Marked For Yellows	Percentage Yellows
1921	15	287,466	324	17,376	4.45
1922	14	442,507	422	11,052	2.50
1923	14	482,614	417	10,698	2.21
1924	12	674,012	456	6,064	.89
1925	13	655,493	403	2,326	.35
1926	13	624,743	390	2,524	.40
1927	13	802,033	447	1,846	.23
1928	19	922,540	533	1,317	.14
1929	25	1,030,165	661	1,570	.15
1930	19	900,252	536	703	.078
1931	18	755,440	382	752	.099

CEREAL DISEASES

SUMMARY OF VIRGINIA CEREAL DISEASE SURVEY FOR 1931

James Godkin

A cereal disease survey was conducted from May 11 to July 1, in the following counties: Campbell, Halifax, Dinwiddie, Charlotte, Prince Edward, Amherst, Bedford, Mecklenburg, Caroline, Botetourt, Pulaski, Smyth, Grayson, and Scott. Thirty-four wheat fields, two oat fields, four barley fields, and five rye fields were examined in these counties for the presence of diseases. The wheat fields varied in size from 3 acres up to 60 acres, and the total acreage examined for wheat was 283. The two oat fields were 3 and 4 acres

in size respectively. The four barley fields varied in size from 6 acres up to 20 acres, with a total of 57 acres. The five rye fields varied in size from 1 acre up to 40 acres, and the total acreage was 76. Loose smut of wheat (Ustilago tritici) was found in all fields examined, except in hot water treated fields of Charlotte and Caroline counties. The percentages ranged from .5 per cent up to 4 per cent with an average of about 1 per cent for all of the fields. Stinking smut of wheat (Tilletia sp.) was found during the survey in the following counties: Dinwiddie, Bedford, Pulaski, Grayson, Loudoun, Page, Prince William and Fairfax. It was also reported from practically all of the other wheat-producing counties of the State. The percentages ranged from a trace up to 40 per cent with an average of about 2 per cent for all the fields observed. The nematode disease (Tylenchus tritici) was found in Pulaski, Page, Loudoun, Fairfax, Prince William, Montgomery, and Albemarle counties. From a trace to probably not more than 3 per cent occurred in these counties. Heaviest infestations were found in Page County. R. W. Leukel from the U. S. Department of Agriculture, Washington, helped in a survey of this county in the late fall. Black stem rust (Puccinia graminis) was serious in sections of Grayson and Smyth counties. Ninety per cent infection was found in one wheat field of Grayson County amounting to an absolute loss of the crop. Leaf rust (Puccinia triticina) of wheat was general, running from 5 per cent up to 35 per cent and averaging about 5 per cent for the crop examined.

Hail injury caused considerable damage in a narrow strip of Bedford County and including some ten farms, more or less. Oat smuts (Ustilago avenae and U. levis) ran around 4 per cent in the fields examined. In untreated barley fields both smuts totalled around 6 per cent; about 3 per cent loose smut (Ustilago nuda) and 3 per cent covered smut (U. hordei). Rye fields examined were relatively free from diseases, there being from a trace up to 5 per cent leaf rust (Puccini dispersa) in all fields observed.

TOBACCO DISEASE SURVEY

SUMMARY OF FIELD SURVEY FOR TOBACCO DISEASES IN VIRGINIA

James Godkin

Forty-two fields totalling 76 acres were inspected for the presence of diseases in Pittsylvania, Scott, Washington, Smyth, Henry and Patrick Counties. Blackfire (Bact. angulatum) and Mosaic were the major troubles observed in the field this season. A comparison of fields and plant beds shows that where seed treatment with other plant bed sanitation measures

were practised there was less Blackfire in the field. One of the worst cases of Mosaic ever observed in Virginia was found this season in Pittsylvania County, almost 100 per cent infection. One field was observed with as high as 40 per cent infection of Black Root Rot (Thielavia basicola). Frenching was severe in three fields in Scott County, running 50 per cent in one of these fields. The prevalence of tobacco diseases this season was due in a large measure to favorable weather conditions.

SUMMARY OF A TOBACCO DISEASE SURVEY MADE IN NORTH CAROLINA IN 1931

E. Y. Floyd

A large number of our most serious diseases seem to begin in the plant bed or soon after transplanting. Black root-rot, (Thielavia basicola), was found in Harnett County in plant beds which had been limed heavily in 1930, and used again in 1931. While the disease was very severe in the beds it was not always bad in the fields. Harnett County has 2,000 acres of tobacco this year that will not pay expenses due to the black root-rot and at least 3,000 acres that were affected 15 per cent. Lime had been used on all the fields observed. Alamance, Chatham, Granville, Guilford, and Rockingham counties have fields that show 80 per cent infection of black root-rot. In experiments conducted by Dr. R. F. Poole in Alamance and Guilford Counties, it was found that 1 pound of nitrate of soda to 50 gallons of water used for watering the plants at the time of transplanting resulted in much quicker growth on infested soils. Superphosphate 1 pound to a gallon of water had the same effect. 1,000 pounds of lime to the acre on infested soils increased the disease 90 per cent. On fields in Rockingham County where the soil was piled up to the stalk, which resulted in new root development higher up on the stem, an excellent crop of good tobacco was obtained from plants which appeared to be beyond recovery in June. Black root-rot is increasing on all the soil types each year where liming or heavy manuring is practiced or legumes are being turned under year after year.

Mosaic has spread practically all over the tobacco section including the Burley tobacco in the western part of the State. The fields observed that had little or no mosaic were where a rotation had been practiced and none of the workers used tobacco or were very careful in the use of tobacco while working with the young plants. In the large number of fields observed where tobacco followed tobacco, 50 per cent more mosaic plants occurred than where tobacco followed corn, cotton, or fallow.

Root knot (Caconema radicicola) did more damage to the tobacco crop than any other single disease this year. Never before have so many fields completely failed due to root knot as in 1931. Two hundred and fifty thousand acres of tobacco are grown each year on soils similar to the ones that were so badly affected this year. The counties having least root knot are Bertie, Hertford, and Martin. These counties use a rotation generally of peanuts and tobacco. Much of the damage actually due to root knot is attributed to weather by growers.

A stem rot, caused by Sclerotium rolfsii is increasing in all the northeastern counties where tobacco, peanuts, and soybeans are used in the rotation. A large number of fields were observed where 30 per cent of the plants were worthless on account of this disease. No stem rot was observed in the western counties, Caldwell, Stokes, and Surry, but it developed as far west as Raleigh and Apex.

Sore-shinn (Corticium vagum) appeared in wet moist places in some fields in all sections of the State but did not show such severe increase or spread so alarmingly as did the stem rot.

Black-fire (Bacterium angulatum) was observed in only one northeastern county, Bertie County, and only one other eastern county, Green County. In the Piedmont section of the State the disease was very severe. At the tobacco experiment station, Oxford, 70 per cent of the plants were severely diseased with black-fire on the limed end of plots with pH 7.0. In the same rows on the unlimed end of the plot, the soil reaction was pH 5.0, and not over 20 per cent of the plants were severely diseased. In other places also the disease was observed to be severe where lime was applied. Where peanuts were grown the preceding year, the tobacco was black green in color and free from black-fire. This may or may not have any relation to absence of the disease.

Hollow-stalk (Bacillus carotovorus) did not do a great deal of damage in the flue-cured tobacco. The Burley tobacco in Madison County is affected more severely. This disease does not cause much loss in North Carolina.

Granville wilt (Bacterium solanacearum) is much more severe in the old section than it was 16 or 17 years ago, and occurs in Beaufort County. Crop rotation has not proven entirely satisfactory but will help if resistant crops are used for a long enough time.

Frog eye (Cercospora nicotianae) occurred in the Coastal Plain section, but very little in the Piedmont section. This disease in a mild form seems to improve the value of smoking tobacco. Frog-eye was not so prevalent in 1931 as in 1930.

Fusarium wilt (F. oxysporum var. nicotianae) was found in one field in Duplin County. About 1 per cent of a 14-acre field was a total loss; tobacco on new and old soil had the disease about the same.

Forsyth and Stokes Counties sustained severe loss in 1930 from Black shank (Phytophthora nicotianae). This disease was so severe that the farmers took the precautions recommended by the authorities and in 1931 none of the diseased fields were planted and no noticeable spread occurred.

Leaf spot due to Macrosporium longipes was more prevalent this year than during the previous five years. In the vicinity of Summerfield the disease caused complete loss in some fields. The heavy rains, combined with lateness of the crop near the end of the summer appeared to be contributing factors.

Sand drown, or magnesium deficiency on tobacco was much worse in Martin, Bertie, and Hertford Counties due to the fact that calcium lime had been used the previous year in the production of peanuts.

Potash hunger was observed on the heavily limed soils to a much greater extent than on the unlimed soils.

Excessive nitrogen has caused loss of quality and total pounds this year. The leaf is worthless to sell in this case, having no more life and elasticity than an oak leaf.

The cherry-red leaf after curing is a disease that no one has explained satisfactorily. Sometimes one-half of the leaf is yellow and one-half cherry red. Many times this destroys the value almost entirely.

Brown Root - A brown root condition, similar in some respects to the brown root-rot reported elsewhere, was wide spread in the State. It was most severe where tobacco followed tobacco. The presence of nematodes in the brown root areas was very noticeable. In some cases the symptoms were similar to those caused by Thielavia basicola, but did not show the spores always readily obtained when this fungus is present. Furthermore, the root parts away from the stem were more severely injured than those near the stem, where the fungus is most prevalent.